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LANDSAT 4 AND 5

(Emergency)

NC999967

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LV/Range:

Launch Date: LANDSAT 4, July 16, 1982 - LANDSAT 5, March 1, 1984
Projected SC Life/DSN Support: 4th quarter 1989/4th quarter 1989

Project Responsibility: Goddard Space Flight Center (GSFC)

Source: SIRD/NSP
Sponsor: OSO

A. MISSION DESCRIPTION

The primary purpose of LANDSAT is to study Earth resources. Each satellite contains a Thematic Mapper (TM) and a Multispectral Scanner (MSS) imaging device plus mission unique hardware.

B. FLIGHT PROFILE

LANDSAT 4 is currently in a circular Sun-synchronous orbit with orbital parameters of 699 km x 701 km x 98 degrees inclination. The orbital period is 99 minutes. LANDSAT 5 was launched into a nearly identical orbit with parameters of 705 km x 705 km x 98.2 degrees.

C. COVERAGE

1. Coverage Goals

The DSN will support LANDSAT 4 or 5 during emergencies that would prevent satellite-to-Earth communications using the standard TDRSS-White Sands data link. The DSN 26-meter antenna subnetwork would support these emergency situations.

2. Network Support

The support provided by the DSN is indicated in the following table:

| <u>System</u> | <u>Goldstone</u> | | | | <u>Canberra</u> | | | | <u>Madrid</u> | | |
|---------------|------------------|----|----|----|-----------------|----|----|----|---------------|----|----|
| | 12 | 14 | 15 | 16 | 42 | 43 | 45 | 46 | 61 | 63 | 66 |
| S-band TLM | | | | E | | | | E | | | E |
| S-band CMD | | | | E | | | | E | | | E |
| S-band TRK | | | | E | | | | E | | | E |

NOTE: E = Emergency

D. FREQUENCY ASSIGNMENTS

Frequencies are allocated according to the following table:

| <u>System</u> | <u>Uplink (MHz)</u> | <u>Downlink (MHz)</u> | <u>Polarization</u> |
|---------------|---------------------|-----------------------|---------------------|
| S-band TLM | -- | 2287.5 | RCP |
| S-band CMD | 2106.4 | -- | RCP |
| S-band TRK | 2106.4 | 2287.5 | RCP |

E. SUPPORT PARAMETERS

The support parameters for the Telemetry, Command, and Support Systems are listed below:

(1) Telemetry

| | |
|----------------------|-----------------------|
| Data Streams | 1 |
| Format | PCM/PSK |
| Subcarrier Frequency | 768 kHz RT/597 kHz PB |
| Bit Rates | 1 kb/s RT/24 kb/s PB |

(2) Command

| | |
|----------------------|------------|
| Format | PCM/PSK/PM |
| Subcarrier Frequency | 16 kHz |
| Bit Rate | 2.0 kb/s |

(3) Support

| | |
|--------------------|----------------|
| Uplink Power | 16 W (Nominal) |
| Antenna Rate | Moderate |
| Antenna Angle Data | Required |
| Antenna Autotrack | Required |
| Doppler Rates | Moderate |
| Range Format | SINE |
| Recording | |
| . Analog | Required |
| . Digital | Not required |

F. TRACKING SUPPORT RESPONSIBILITY

The allocation of responsibilities for tracking support is listed in the following table:

| <u>Mission Phase</u> | <u>Support Responsibility</u> |
|-----------------------|-------------------------------|
| Earth Orbit (Phase 1) | GSFC |
| Earth Orbit (Phase 2) | |

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